

**NATURAL RESOURCES CONSERVATION SERVICE**

**VIRGINIA CONSERVATION PRACTICE STANDARD**

**DRAINAGE WATER MANAGEMENT**

(Ac.)

Code 554

**DEFINITION**

Control of water surface elevations and discharge from surface and subsurface drainage systems.

**PURPOSES**

The purposes of this practice are to:

- Improve water quality.
- Improve the soil environment for vegetative growth.
- Reduce the rate of oxidation of organic soils.
- Prevent wind erosion.
- Enable seasonal shallow flooding.

**CONDITIONS WHERE PRACTICE APPLIES**

This practice applies where:

- The topography is relatively smooth, uniform, and flat to gently sloping.
- A water table may be maintained without excessive seepage and without having an adverse impact on adjoining properties.

**CRITERIA**

**CRITERIA FOR ALL PURPOSES**

The system shall be designed to remove the water required for adequate drainage. The rate of outflow and the level of the water table shall be controlled by structures or pumps. Water velocities in the soil near the drain shall be kept slow enough to prevent soil particles from entering the drainage system.

Structures and pumps shall be located where they are accessible and subject to convenient control. Designs of critical components shall be in accordance with pertinent NRCS practice standards.

**ADDITIONAL CRITERIA TO IMPROVE WATER QUALITY**

The system shall prevent automatic discharge of storm water during minor rainfall events. The controlled discharge of excess water shall account for water not otherwise removed by evapotranspiration and seepage. The uniformity of storm water drawn down shall be improved throughout the areas influenced by the designed system. The distance the water must travel in surface ditches before it reaches the main discharge point shall be maximized when practical.

Conservation practice standards are reviewed periodically, and updated if needed. To obtain the current version of this standard, contact the Natural Resources Conservation Service.



#### **ADDITIONAL CRITERIA TO IMPROVE SOIL ENVIRONMENT FOR VEGETATIVE GROWTH**

The combined capacity of the surface and subsurface facilities shall satisfy the appropriate drainage coefficient for the crops to be grown. The water table shall be held between predetermined elevations at all points in the design area when the system is being used for sub-irrigation.

#### **ADDITIONAL CRITERIA TO REDUCE THE RATE OF OXIDATION OF ORGANIC SOILS**

Drainage beyond that necessary to provide an adequate root zone for a crop shall be kept to a minimum. When practicable, the water table shall be raised to the surface, or to a designated maximum elevation, for a sufficient time to return the saturated zone to anaerobic conditions. The implementation of this practice must result in a reduced average annual thickness of the aerated layer of the soil.

#### **ADDITIONAL CRITERIA TO PREVENT WIND EROSION**

The system shall provide sufficient moisture to the soil surface, either by ponding or capillary action, to prevent wind erosion when there is insufficient organic residue or plant material on the surface.

#### **ADDITIONAL CRITERIA TO ENABLE SEASONAL SOIL SATURATION OR SHALLOW FLOODING**

The system shall provide saturation to the surface or shallow flooding for a sufficient time to accomplish the desired pest control, provide wildlife habitat, or reduce the rate of oxidation of organic soils.

#### **CONSIDERATIONS**

An adequate water supply should be available when it is necessary to raise the water.

The effect of drainage systems on wetlands should be evaluated.

Maintaining a high water table, especially in arid areas, may not be appropriate due to salinity/alkalinity.

#### **PLANS AND SPECIFICATIONS**

Plans and specifications shall be prepared in accordance with the criteria of this standard as necessary and shall describe the requirements for applying the practice to achieve its intended use.

#### **DESIGN DATA**

The following items shall be included in the design:

1. All design data required for the individual components of the system.
2. Drainage area, sketch of managed area, design outflow rates, drainage coefficient, and water levels.
3. Operation and Maintenance requirements for the components and overall system.
4. Environmental Evaluation Form VA-EE-1.

#### **CHECK DATA**

1. Check data required for the system's components.
2. Document that the items in No. 2 above have been checked and verified.
3. Record, sign, and date statement of system adequacy.

#### **OPERATION AND MAINTENANCE**

Operation and maintenance requirements shall be developed that will identify the intended purposes of this practice and that will identify critical dates and target elevations of the water level necessary to accomplish the intended purposes.



The plan shall also include the operation and maintenance of critical components of the infrastructure used to manage the drainage water.

## REFERENCES

1. NRCS, Field Office Technical Guide, Section IV.



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**Approved Practice Narratives**

(Ac.)

**CODE 554**

554 D1 Drainage Water Management:  
Drainage Water Management shall be used to  
improve water quality in accordance with the  
attached plan.

554 D2 Drainage Water Management:  
Drainage Water Management shall be used to  
improve the soil environment for vegetative  
growth in accordance with the attached plan.

554 D3 Drainage Water Management:  
Drainage Water Management shall be used to  
reduce the rate of oxidation of organic soils in  
accordance with the attached plan.

554 D4 Drainage Water Management:  
Drainage Water Management shall be used to  
prevent wind erosion in accordance with the  
attached plan.

554 D5 Drainage Water Management:  
Drainage Water Management shall be used to  
enable seasonal shallow flooding in  
accordance with the attached plan.

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